

## **Aquifer Vulnerability Analysis: A Valuable Source Water Assessment Tool**

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### **Abstract**

As part of its statewide wellhead protection program, the Indiana Department of Environmental Management (IDEM) desired to evaluate the *aquifer vulnerability* for wellhead areas within the state of Indiana. This desire was the result of the need to satisfy the requirements of the *Source Water Assessment Plan* for the State of Indiana, which set as one of its goals, the need for such an evaluation in order to aid the State in future planning and prioritization activities. This paper describes the aquifer vulnerability analysis protocol that was developed to assess the vulnerability of groundwater drinking water supplies to pollutant releases within wellhead protection areas. The protocol is based on information already contained in each public drinking water supply's Wellhead Protection Plans (WHPs) submitted to the State. This protocol includes the use of an *Aquifer Vulnerability Index* (AVI) that relates to the geologic, hydrogeologic and pollutant source conditions present in the wellfield and an *Aquifer Vulnerability Matrix*, which provides low, moderate and high classification ranges for expected wellfield conditions. The protocol has proven to be a valuable tool for providing an objective, semi-quantitative ranking system for aquifer vulnerability.